POSSUM ASSEMBLAGES IN RAINFOREST OF THE CARBINE UPLANDS, NEQ, WITH SPECIAL REFERENCE TO *HEMBELIDEUS LEMUROIDES*. *Memoirs of the Queensland Museum 34(1):188. 1993:-* Four ringtail possum (Pseudocheiridae) species are confined to the upland rainforests of northeastern Queensland's Wet Tropics. These are the Lemuroid Possum (*Hemibelideus lemuroides*), Green Possum (*Pseudochirops archeri*), Daintree Ringtail (*Pseudocheirus cinereus*) and Herbert River Ringtail (*P. herbertensis*). At least five other, wider-ranging species (the Long-tailed Pygmy Possum, *Cercartetus caudatus*; Striped Possum, *Dactylopsila trivirgata*; Common Ringtail, *P. peregrinus*; Sugar Glider, *Petaurus breviceps* and Coppery Brushtail, *Trichosurus vulpecula johnstonii*) are also regularly encountered. These high altitude rainforests are not uniformly distributed. Mountainous terrain divides the area into discrete blocks, montane subregions (sensu Winter et al., 1984; Winter, 1991). A major altitudinal discontinuity exists between the Atherton Tableland and the Carbine Uplands. Geographic separation is evident for upland obligate fauna unable to negotiate the relatively low altitude Black Mountain rainforest corridor connecting them. With isolation, allopatric speciation has occurred. This is reflected in the separation of *P. cinereus*, of the Carbine Uplands (Murray et al., 1989), from *P. herbertensis* of the Atherton Tableland. The former was known as the ashen-coloured race or subspecies of *P.herbertensis*.

Vehicular spotlight runs were conducted along the Mt Lewis Forestry Rd (approximately 110km NW Cairns, NEQ) during the summers of 1986/87 and 1987/88. Altitudes between 500-1200 m were surveyed during 13 spotlight traverses, averaging approximately 6km and 2 hours duration. Most of this survey was undertaken at altitudes exceeding 900m (19.75 hours) with only 6.75 hours of survey carried out below this. Only when possums could be positively identified were they accepted and recorded. Altitudes were recorded by altimeter. This method was employed to detect changes in possum density and community make-up with changes in altitude along the traverse. In addition, it was anticipated that a sufficient number of *H. lemuroides* sightings could be obtained to estimate the relative proportion of leucist individuals within the population, and provide evidence to support or refute the suggested lower altitudinal limit of 900m (Winter et al., 1984) of the Carbine population. Results of the survey are summarised in Table 1.

While only four possum species were recorded during the period of the survey (Table 1), an additional two species are known to occur in rainforests of the Carbine Uplands. The species *C. caudatus* and *P. breviceps* are recorded only occasionally. The numerically dominant species within all altitudinal bands between 501-1100 was *P. cinereus*. Above 1100m, more *H. lemuroides* were recorded. A general trend of increasing possum abundances with increasing altitude was partially due to this sudden appearance of *H. lemuroides* at the higher elevations. The lowest elevation at which *H. lemuroides* was recorded was 1070m. If such a lower altitudinal limit is consistent for the entire northern population isolate of this species, it may indicate a restricted relictual distribution and lengthy separation from the population on the Atherton Tableland. The incidence of leucism among this population was high, 31.56% of individuals recorded.

TABLE 1. Possums on Mt Lewis Rd, Carbine Uplands.

Altitude (m)	*P.cinereus*	*H.lemuroides* (dark/pale)	*P.archeri*	*D.trivirgata*	Total per spotlight hour
1101-1200	65	98 (66/32)	1		16.40
1001-1100	34	3(3/0)	2	1	7.27
901-1000	18		1	1	4.71
801-900	13		2		5.00
701-800	4		1		2.00
601-700	2				2.67
501-6002					4.00
Totals	138	101 (69/32)	7	2	9.36

The rainforest possum assemblage of the Carbine Uplands differs in several ways from that of the Atherton Tableland. Replacement of *P. herbertensis* with *P. cinereus*, and absence of *T. vulpecula johnstonii* from the Carbine Uplands are significant differences. Leucism in the Atherton population of *H. lemuroides* is also a rarity. One biologist noted only three pale individuals in thousands of records made over a period of 6 years of upland possum research on the Atherton Tableland (N. Goudberg, pers. comm.). Further, the suggested lower altitudinal limit of 480m (Winter et al., 1984) is substantially lower for Atherton Tableland *H. lemuroides* than both the suggested Carbine Uplands lower limit of 900m (Winter et al.,1984) and 1070m, which was the lowest record made in this survey. (Many hours of traverse prior and subsequent to those reported here have failed to reveal any *H. lemuroides* at lower elevations). These observations suggest investigation of the taxonomic status of animals from the northernmost population would be worthwhile.

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